WHAT IS CLAIMED IS:

1. An optical system comprising:

an optical illumination subsystem for producing an optical beam having a swept wavelength;

an optical coupler for receiving an output of said optical illumination system;

a measurement resonator coupled to a first output of said optical coupler for generating a first resonance within a path of said measurement beam;

at least one reference resonator coupled to a second output of said optical coupler for generating at least a second resonance within a path of said reference beam;

a measurement optical detector coupled to said measurement resonator for measuring a measurement intensity of light at said measurement resonator;

at least one reference optical detector coupled to said reference resonator for measuring a reference intensity of light at an associated one of said at least one reference resonator; and

a processing subsystem coupled to an output of said measurement optical detector and an output of said at least one reference optical detector for interpreting variations in said

measured intensity in conformity with variations in said reference intensity.

2. The optical system of Claim 1, wherein said processing subsystem comprises a time domain analysis subsystem coupled to said measurement optical detector and said at least one reference optical detector for extracting a time relation of particular points of intensity variations produced at said measurement resonator and said at least one reference resonator when said wavelength of said optical illumination subsystem is swept.

3. The optical system of Claim 1, wherein said processing subsystem corrects said measurement intensity in conformity with said reference intensity, whereby deviations of said measured intensity due to deviations of said wavelength of said optical illumination subsystem from expected values of said wavelength are corrected.

4. The optical system of Claim 1, wherein said processing subsystem corrects said measurement intensity in conformity with said reference intensity, whereby deviations of an optical path length of said measurement resonator from an expected value of said optical path length are corrected.

5. The optical system of Claim 1, wherein said measurement resonator comprises a Fabry-Perot resonator.

6. The optical system of Claim 1, wherein said Fabry-Perot resonator comprises:

a surface of under measurement by said optical system;

a partially reflective surface positioned between said surface under measurement and said measurement optical detector at a tuned optical distance, whereby at a predetermined wavelength of said illumination subsystem, a resonance of said measurement resonator is produced by multiple reflections generated between said surface of measurement and said partially reflective surface.

7. The optical system of Claim 6, wherein said partially reflective surface is a substantially planar surface.

8. The optical system of Claim 6, wherein said partially reflective surface is a curved surface.

9. The optical system of Claim 6, wherein said measurement resonator further includes a lens disposed within said resonator, whereby a region of said surface under measurement is resonantly mapped to a region of said partially reflective surface.

10. The optical system of Claim 9, wherein said partially reflective surface is a partially reflective surface deposited on a surface of said lens.

11. The optical system of Claim 1, wherein said processing subsystem determines a value of said wavelength of said optical illumination subsystem from a time relation of local extrema of said reference intensity and a predetermined optical path length of said at least one reference resonator, and further determines an optical path length of said measurement resonator in conformity with said determined value of said wavelength.

12. The optical system of Claim 1, wherein said measurement resonator has a tunable resonant length responsive to an electrical control signal, wherein said processing system further comprises a control circuit coupled to said measurement resonator for providing said electrical control signal, and wherein said processing system generates said electrical control signal in conformity with said reference intensity, whereby said measurement resonator resonant length is compensated for variations in said wavelength of said optical illumination subsystem.

13. The optical system of Claim 1, wherein said at least one reference resonator comprises at least two reference resonators, said at least one reference optical detector comprises at least two optical detectors, each associated and coupled to a particular one of said at least two reference resonators.

14. A method for performing an optical measurement comprising:

generating a swept-wavelength illumination beam;

splitting said illumination into a measurement beam and at least one reference beam;

introducing said at least one reference beam to at least one reference resonator;

introducing said measurement beam to a measurement resonator;

detecting a measurement intensity of light at said measurement resonator;

detecting a reference intensity of light at said at least one reference resonator; and

interpreting said measurement intensity in conformity with said reference intensity.

15. The method of Claim 14, further comprising:

first determining a time relationship of particular points of said measurement intensity; and

second determining a time relationship of other particular points of said reference intensity, and wherein said interpreting is performed in conformity with a result of said first and second determining.

16. The method of Claim 14, wherein said evaluating corrects said measurement intensity in conformity with said reference intensity, whereby deviations of said measurement intensity due to deviations of said wavelength of said illumination beam from expected values of said wavelength are corrected.

17. The method of Claim 14, wherein said evaluating corrects said measurement intensity in conformity with said reference intensity, whereby deviations of an optical path length of said measurement resonator from an expected value of said optical path length are corrected.

18. The method of Claim 14, further comprising forming said measurement resonator by positioning a partially reflective surface at a predetermined optical distance from a surface under measurement, whereby said measurement resonator forms a Fabry-Perot resonator.

19. The method of Claim 18, further comprising providing a lens between said partially reflective surface and said surface under measurement, whereby a region of said surface under measurement

is resonantly mapped to a region of said partially reflective surface.

20. The method of Claim 14, wherein said evaluating subsystem determines a value of said wavelength of said optical illumination subsystem from a time relation of local extrema of said reference intensity and a predetermined optical path length of said reference resonator, and further determines an optical path length of said measurement resonator in conformity with said determined value of said wavelength.

21. The method of Claim 14, further comprising tuning a resonant length of said measurement resonator in conformity with said reference intensity, whereby said measurement resonator resonant length is compensated for variations in said wavelength of said optical illumination subsystem.

22. The method of Claim 13, wherein said splitting comprises splitting said illumination into a measurement beam and at least two reference beams, and wherein said method further comprises:

introducing a first one of said at least two reference beams to a first reference resonator;

introducing a second one of said at least two reference beams to a second reference resonator;

detecting a first reference intensity of light at said first reference resonator;

detecting a second reference intensity of light at said second reference resonator; and

interpreting said measurement intensity in conformity with said first reference intensity and said second reference intensity.